Attorney Docket No. 108910-00123

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)	
Musso et al	)	Examiner: R. SERGENT
Serial No. 10/790,687	)	Art Unit: 1796
Filed: 03/03/2004	)	
For: FOAMING COMPOSITIONS	)	

DECLARATION OF DR. ALBERTO NICOLETTI

PURSUANT TO 37 C.F.R. § 1.132

Hon. Commissioner of Patents and Trademarks

Washington, D.C. 20231

Sir:

I, ALBERTO NICOLETTI, do hereby declare that:

1. I worked with the inventors of the present invention.

2. I know the content of the above pending application.

3. I have been working in Ausimont (now Solvay) Research & Development Center since 1976 in the field of inorganic and organic chemistry.

4. the following experiments were run under my supervision. Formulations for polyurethane rigid foams have been performed, according to the following procedure:

In a polyethylene cylindrical container (diameter 12 cm, height 18 cm) 100 g of polyol polyether containing silicone surfactant (1.5 %w), 2.0 g of water, 2.5 g of N,N-dimethyl

cycloexylamine, and the required amount of blowing agent were introduced. Said amount was calculated in order to have the same number of moles of the blowing agent in each of the compositions to be tested.

The polyol polyether added had a number of hydroxyl equal to 500 mg of KOH equiv/g, the aminic catalyst a number of hydroxyl equal to 500 mg of KOH equiv/g.

The content of the polyethylene cylindrical container was mixed with a mechanical stirrer for one minute at the rate of 1900 rpm, then 160 g of isocyanate was added and stirring was continued at the same speed for 15 seconds.

The isocyanate used (DESMODUR® 44V20 by BAYER) was a polymeric methylendiphenylisocyanate (PMDI) having a number of hydroxyl equal to 438 mg of KOH equiv/g (% weight of NCO = 32.79 and a number index of 1.1).

The reaction was allowed to complete so that the foams could freely expand. From the central part of each of the obtained foams a portion was drawn for visual inspection of the cell size distribution (homogeneity) and for the experimental measurement of apparent density.

The foaming formulations are reported in Table C together with the results obtained.

The reference formulation is example α comp. of Table 14 of the Specification, using CFC 11 as blowing agent.

The formulations according to the present invention are Under Test A and Test B, and in each of them the molar amount of blowing agent is equal to that of CFC 11 (0.218 moles) in example α comp., whereas the other components are in the same

quantities as % by weight.

In the formulation reported under Test A, the blowing agent was the mixture $HCF_2OCF_2OCF_2H$/HFC 365mfc 60/40 (% by weight), i.e. the same used in example γ in Table 14.

In the formulation reported under Test B, the blowing agent was the mixture $HCF_2OCF_2OCF_2H$/HFC 356ffa 20/80 (% by weight), i.e. the same used in example δ in Table 14.

The experiments were carried out at room temperature (25°C).

TABLE C

	Ex. α comp.	Test A	Test B
Polyol polyether (g)	100	100	100
Water (g)	2	2	2
Aminic catalyst (g)	2.5	2.5	2.5
CFC 11 (g)	30 (0,218 moles)		
HFPE1/HFC 365mfc (60/40) (g)		36,97 (0,218 moles)	
HFPE1/HFC 356ffa (20/80) (g)			36,97 (0,218 moles)
ISOCYANATE (g)	160	160	160
Density (kg/m^3)	30	30.1	29.9
Foam appearance	GOOD	GOOD	GOOD

5. All statements made herein of my own knowledge are true

and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent or registration issuing thereon.

Date: March 25, 2007

(Alberto Nicoletti)

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The Condensed Chemical Dictionary

EIGHTH EDITION

Revised by

GESSNER G. HAWLEY
Formerly Executive Editor, Reinhold Publishing Corporation
Coeditor, Encyclopedia of Chemistry

VNR VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

styrene oxide $C_6H_5\overline{CHOCH_2}$.
Properties: Colorless to pale straw-colored liquid. Boiling range (5 to 95%) 194.2-195°C; f.p. −36.6°C; flash point 180°F (COC); refractive index (n 25/D) 1.5328; sp. gr. (25/4°C) 1.0469; miscible in benzene, acetone, ether, and methanol. Combustible.
Hazard: Moderately toxic and irritant.
Use: Highly reactive organic intermediate.

"Styresol."[36] Trademark for a group of styrenated alkyd resins with air-drying and baking properties and high resistance to gasoline, alkalies, acids, and water.

"Styrocrete."[233] Trademark for latex formulation used as an additive for cement mortar to bond plastic foam to various surfaces.

"Styretex."[474] Trademark for styrenated alkyd resins.

"Styrofoam."[233] Trademark for expanded, cellular polystyrene (now available in colors).
Uses: Insulating material; light-weight materials for boats, toys, etc.; separators in packing containers; airport runways; highway construction.

"Styron."[233] Trademark for polystyrene resins: general purpose, medium and hi impact, heat and impact-heat resistant, and light-stabilized resins ("Styron Verelite"). Available in wide range of translucent and opaque colors, as well as natural and crystal.
Uses: Packaging, toys, appliance parts, bottle closures and containers, hot and cold drinking cups, television cabinet backs, automotive components and machine housings, and lighting equipment.

styryl carbinol. See cinnamic alcohol.

suberane. See cycloheptane.

suberic acid (octanedioic acid) $HOOC(CH_2)_6COOH$.
Properties: Colorless crystals from water; m.p. 143°C; b.p. 279°C at 100 mm. Sparingly soluble in ether; soluble in alcohol and hot water; slightly soluble in cold water. Combustible.
Derivation: Oxidation of cyclooctene or cyclooctane.
Uses: Intermediate for the synthesis of drugs, dyes and high polymers.

suberone. See cycloheptanone.

sublimation. The direct passage of a substance from one physical state to another (i.e., solid to vapor) without appearing in the intermediate (liquid) state. An example is solid carbon dioxide which vaporizes at room temperature; the conversion may also be from vapor to solid under appropriate conditions of temperature.

subnuclear particle. Particles either found in the nucleus or observed coming from the nucleus as the result of nuclear reaction or rearrangement, i.e., neutrons, mesons, etc.

substance. Any chemical element or compound. All substances are characterized by a unique and identical constitution, and are thus homogeneous (q.v.). "A material of which every part is like every other part is said to be homogeneous and is called a substance." (Black and Conant, "Practical Chemistry.")

substantive dye. See direct dye.

substituent. An atom or radical that replaces another in a molecule as the result of a reaction. See substitution.

substitution. The replacement of one element or radical by another as a result of a chemical reaction. Chlorination of benzene to produce chlorobenzene is a typical example; in this case a chlorine atom replaces a hydrogen atom in the benzene molecule.

substrate. (1) A substance upon which an enzyme or ferment acts. (2) Any solid surface on which a coating or layer of a different material is deposited.

subtillin. An antibiotic produced by the metabolic processes of a strain of Bacillus subtilis. It is a cyclic polypeptide similar to bacitracin in chemical structure and antibiotic acitivity, but not as important clinically. Subtilin is active against many gram-positive bacteria, some gram-negative cocci, and some species of fungi. It is a surface tension depressant, and its antibiotic action is increased by use of wetting agents.
Properties: Soluble in water in pH range 2.0-6.0; soluble in methanol and ethanol (up to 80%); insoluble in dry ethanol or other common organic solvents. Relatively stable in acid solutions. Inactivated by pepsin and trypsin, and destroyed by light.
Uses: Medicine; seed disinfectant.

succinaldehyde (butanedial) $OHCCH_2CH_2CHO$.
Properties: Liquid; sp. gr. 1.064 (20/4°C); b.p. 169-170°C. Refractive index 1.4254. Soluble in water, alcohol, and ether. The name succinaldehyde is often incorrectly used in commerce as a synonym for succinic anhydride.

succinic acid (butanedioic acid) $CO_2H(CH_2)_2CO_2H$.
Properties: Colorless crystals; slightly soluble in water; soluble in alcohol and ether; odorless; acid taste. Sp. gr. 1.552; m.p. 185°C; b.p. 235°C. Combustible. Low toxicity.
Derivation: Fermentation of ammonium tartrate.
Grades: Technical; C.P.; F.C.C.
Containers: Bottles; barrels; kegs; fiber drums.
Uses: Medicine; organic synthesis; manufacture of lacquers, dyes, esters for perfumes, succinates; photography; in foods as a sequestrant, buffer, neutralizing agent.

succinic acid, 2,2-dimethylhydrazide $(CH_3)_2NNHCOCH_2CH_2COOH$.
Properties: White crystals; m.p. 155°C; pH 3.8 (500 ppm); soluble in water; insoluble in simple hydrocarbons.
Use: Growth retardant specially used in greenhouses; retards premature fruit drop.

succinic acid peroxide $(HOOCCH_2CH_2CO)_2O_2$.
Properties: Fine white, odorless powder; m.p. 125°C (dec). Moderately soluble in water; insoluble in petroleum solvents and benzene.
Hazard: Moderately toxic by ingestion and inhalation; irritant to skin. Fire risk in contact with combustible materials.
Uses: Polymerization catalyst; deodorants; antiseptics.
Shipping regulations: (ICC, CG, IATA) Yellow label.

succinic anhydride (2,5-diketotetrahydrofurane; succinyl oxide; butanedioic anhydride) $H_2\overline{CC(O)OC(O)CH_2}$.
Properties: Colorless or light-colored needles or flakes; sp. gr. 1.104 (20/4°C); m.p. 120°C; b.p. 261°C. Soluble in alcohol and chloroform; insoluble in water. Sublimes at 115°C at 5 mm pressure. Combustible.
Grade: Distilled.
Containers: 250-lb drums; carlots.
Hazard: Moderately toxic and irritant.
Uses: Manufacture of chemicals, pharmaceuticals, esters; hardener for resins.